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ABSTRACT

This paper examines correlations between children's educational outcomes and family structure. Although popular discussions focus on distinctions between two-parent and single-parent families, earlier research shows that outcomes for stepchildren are similar to outcomes for children in single-parent families, and earlier researchers suggested that the crucial distinction is between children who were reared by both biological parents and children who were not. This paper suggests that such a finding is misleading, asserting that educational outcomes for both types of children in blended families--stepchildren and their half-siblings who are the joint biological children of both parents--are similar to each other and substantially worse than outcomes for children reared in traditional nuclear families. It concludes that the crucial distinction is between children reared in traditional nuclear families and children reared in other family structures. The paper also examines the effect of family structure on children's outcomes, recommending a reformulation of the family structure question by specifying some explicit counterfactual and expressing a preference for a policy-relevant counterfactual. The paper suggests considering the effect of reducing the marriage penalty in the earned income tax credit that makes the credit essentially unavailable to two-earner couples. (Contains 44 references.) (SM)

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DOES FAMILY STRUCTURE AFFECT CHILDREN'S EDUCATIONAL OUTCOMES?

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Does Family Structure Affect Children's Educational Outcomes?
Robert A. Pollak and Donna K. Ginther
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ABSTRACT

This paper makes two contributions. First, it adds to the growing literature describing correlations between children's educational outcomes and family structure. Although popular discussions focus on the distinction between two-parent families and single-parent families, McLanahan and Sandefur [1994] show that outcomes for stepchildren are similar to outcomes for children in single-parent families. McLanahan and Sandefur describe their results as showing that the crucial distinction is between children who were reared by both biological parents and children who were not. This description is misleading.

This paper shows that educational outcomes for both types of children in blended families -- stepchildren and their half-siblings who are the joint biological children of both parents -- are similar to each other and substantially worse than outcomes for children reared in traditional nuclear families. We conclude that, as a description of the data, the crucial distinction is between children reared in traditional nuclear families (i.e., families in which all children are the joint biological children of both parents) and children reared in other family structures (e.g., single-parent families or blended families).

The paper's second contribution is to clarify the question, "What is the effect of family structure on outcomes for children?" Interpreted literally, the question asks about the effect of one endogenous variable on another. We argue for reformulating the family structure question by specifying some explicit counterfactual, and express a preference for a policy-relevant counterfactual. As an example, we suggest considering the effect of reducing the "marriage penalty" in the earned-income tax credit (EITC) that makes the credit essentially unavailable to two-earner couples. The EITC marriage penalty counterfactual, like any policy-relevant counterfactual, focuses attention on outcomes for those children whose parent's behavior is affected by the incentives created by the policy change.

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Introduction

What is the effect of family structure on educational outcomes for children? Everyone knows that children from two biological parent families do better than children from single-parent families. Journalists and politicians often assume that correlation implies causation. Economists know better.

This paper makes two contributions. First, we add to the growing literature describing correlations between children's educational outcomes and family structure. Although popular discussions focus on the distinction between two-parent families and single-parent families, McLanahan and Sandefur [1994] show, and other researchers have confirmed, that outcomes for stepchildren are similar to outcomes for children in single-parent families. McLanahan and Sandefur describe their results as showing that the crucial distinction is between children who were reared by both biological parents and children who were not. This description is misleading.

We show that, as a description of the data, the crucial distinction is between children who grow up in what the Census Bureau calls "traditional nuclear families" (i.e., families in which all children are the joint biological children of both parents) and children who grow up in other family structures (i.e., single-parent families; blended families). We show that outcomes for both types of children in blended families -- stepchildren and their half-siblings who are the joint biological children of both parents -- are similar to each other and substantially worse than outcomes for children reared in traditional nuclear families. Our blended family result adds to the stock of "stylized facts" -- simple empirical regularities looking for explanations. Our results also illustrate the importance of classification schemes.

Classification schemes often determine what we see. Nearly all previous research on family structure has viewed the world through a "child-based" classification scheme, classifying a child's family as a "stepfamily" or a "two-biological-parent family" on the basis of the child's relationship to the parents. With a child-based classification, the same blended family is a stepfamily for one child and a

two biological parent family for another. Instead of a child-based classification of family structure, we use one that is "family-based." With a family-based classification, stepchildren and joint biological children who live together are said to belong to "blended families." Using a child-based classification, previous researchers focused on differences between children reared with a stepparent and children reared by both biological parents, a category that is dominated by children reared in traditional nuclear families but which also includes the joint biological children in blended families. Using a family-based scheme, we distinguish between children reared in traditional nuclear families and the joint biological children in blended families. We investigate whether outcomes for the joint biological children in blended families differ significantly or substantially from outcomes for children in traditional nuclear families, outcomes for stepchildren, or outcomes for children in single parent families.

The family structure literature has revealed more complicated patterns in the data than our previous paragraphs suggest. One strand in the literature moves from simple stylized facts -- differences in mean outcomes for children reared in various family structures -- to "descriptive regressions" that control for the effects of other variables such as mother's education and family income. We find that controlling for additional variables substantially reduces the correlation between children's educational outcomes and living in a single-parent family, and that often the effect of living in a single-parent family is no longer statistically significant.

Those who favor policies that promote marriage often cite stylized facts – simple correlations between family structure and children's outcomes -- while those skeptical of such policies respond by citing descriptive regressions that control for variables such as mother's education and family income. Both sides brandish descriptive regressions that support their positions, but the regressions used in the political debate are only summaries of correlations among endogenous variables. Honest policy debates rest on beliefs about structural relationships, not on stylized facts or descriptive regressions.

Our second contribution is to clarify the question, "What is the effect of family structure on outcomes for children?" In economics most questions have default counterfactuals that are not spelled out explicitly because they are generally understood. For example, the question, "What would be the effect of a ten-cent increase in the gasoline tax?" implicitly compares the increase with leaving the gasoline tax unchanged. Questions about the effect of family structure lack default counterfactuals. Interpreted literally, the family structure question asks about the effect of one endogenous variable on another. A major source of confusion in the family structure literature is that the question is ill-posed. We argue for reformulating the family structure question by specifying an explicit counterfactual.

Any explicit counterfactual will nail down the family structure question, but we find policy-relevant counterfactuals most interesting. For example, consider the effect of eliminating the "marriage penalty" in the earned-income tax credit (EITC), a penalty that makes the credit essentially unavailable to two-earner couples. Advocates of incentives to induce individuals to enter marriage and stay married often cite the fact that, on average, children from two-parent families have better outcomes than children from single-parent families. Their implicit claim is that strengthening the incentives to marry (e.g., removing the marriage penalty) would increase the proportion of children who grow up in two-parent families and that, as a result, children's educational outcomes would improve. Reformulating the question as an explicit counterfactual, we focus attention on the effects of removing the EITC marriage penalty on marital and nonmarital fertility, and on outcomes for the children whose parents' behavior is altered by the change in incentives. Legislators' eyes may glaze over at the mention of treatment effects, but the idea is crucial. Stylized facts about mean differences in outcomes for children reared in traditional nuclear families and single-parent families are not evidence that removing the marriage penalty would improve outcomes for children.

Our paper proceeds as follows. In section 1 we summarize briefly the empirical literature on family structure and outcomes for children. In section 2 we discuss our data and our estimation procedures and in section 3 our empirical results. Section 4 discusses counterfactuals and section 5 is our conclusion.

1. Conceptual Issues and a Review of the Literature

What is the effect of family structure on children's educational outcomes? Social scientists have written extensively on the relationship between family structure and children's socio-economic outcomes, some making modest claims about correlations and others making less-modest claims about causation. When estimating the determinants of education, economists often control for family structure, along with exogenous variables such as race and gender.[1] Few researchers would claim that family structure is exogenous, and it is difficult to rule out the possibility that some unobserved variables or processes influence both family structure and educational outcomes. The threshold difficulty of estimating the causal effect of family structure on children's educational attainment is the lack of a well-specified counterfactual.

Perhaps the most influential work on the correlation between family structure and children's outcomes is McLanahan and Sandefur [1994]. They find that children who grow up in single-parent or stepparent families have lower educational attainment than those who grow up with both biological parents. The estimated correlations depend on the control variables used in the regression. After controlling for mother's employment and occupation, Biblarz and Raftery [1999] find that children living with both biological parents or a single-mother have higher occupational status and educational

[1] Several economists, including Haveman and Wolfe [1994, 1995] and Manski, McLanahan, Sandefur, and Powers [1992], Eckstein and Wolpin [1999], and Heckman, Hee, and Rubinstein [1999] include measures of family structure in estimates of children's educational outcomes. These estimates, however, are not linked to structural models of family structure and investments in children.

attainment than children living with a stepparent or children living with a single father. Wojtkiewicz [1993] and Boggess [1998] find a negative and significant correlation between living with a stepfather and children's educational attainment.

To interpret these correlations as evidence of the causal effect of family structure on children's outcomes, researchers need to assume that family structure is exogenous. This assumption is false if there are processes that jointly determine family structure and children's outcomes. Researchers attempting to control for the endogeneity of family structure have made various identifying assumptions. Manski, Sandefur, McLanahan, and Powers [1992] evaluate the impact of alternative parametric and identification assumptions on the estimated effect of family structure on high school graduation. They demonstrate that the estimated effect depends on the identification assumptions imposed. They conclude: "Any attempt to determine the family structure effect more tightly must bring to bear prior information about the process generating family structure and children's outcomes. As long as social scientists are heterogeneous in their beliefs about this process, their estimates of family structure may vary" (p. 36).

Subsequent research that attempts to control for the endogeneity of family structure bears out this conclusion. Fixed effects estimates allow one to control for the endogeneity of family structure assuming there are unobserved family characteristics that are correlated with both child outcomes and family structure. Using fixed effects estimators, Ermisch and Francesconi [2001], Case, Lin and McLanahan [2001], and Evenhouse and Reilly [2001] find that family structure has a negative and significant effect on educational outcomes, while Gennetian [2001] finds no significant effect of family structure on children's cognitive assessment outcomes. Parental death, some researchers have argued, is a quasi-natural experiment that can be used to examine the effect of family structure on children's outcomes. Lang and Zagorsky [2001], Corak [2001], and Biblarz and Gottainer [2000] find that parent-

absence due to death has less of an impact on children's outcomes than parent-absence due to divorce. Finally, using longitudinal data researchers have compared children's outcomes before and after divorce. Cherlin et al. [1991] find that elementary school children whose parents eventually divorce performed poorly in school prior to the change in family structure. Painter and Levine [1999], however, find no prior poor performance when they examine educational outcomes for teenagers.

The lack of a consensus about the effect of family structure on children's outcomes is striking. Research shows that living with a single-parent or a stepparent is *correlated* with poor outcomes for children. Biblarz and Raftery [1999] show that the correlations between family structure and children's outcomes diminish substantially as more family background variables are added to the specification. When researchers attempt to address the endogeneity of family structure, the estimated effect of family structure depends on the identification assumptions employed. The most consistent set of results are found when parental death is used as a quasi-natural experiment: the death of a parent appears to have a less negative effect on child outcomes than divorce. With the exception of Biblarz and Raftery [1999], few researchers have evaluated the robustness of the correlation between family structure and children's outcomes. In the next section we use three data sets to shed additional light on the correlation between family structure and educational attainment.

2. Data and Estimation Strategy

We use three data sets to investigate the association between family structure and children's educational outcomes: the National Longitudinal Survey of Youth (NLSY), the Panel Study of Income Dynamics (PSID), and the children of females from the National Longitudinal Survey of Youth (NLSY-Child). The NLSY and PSID are used to examine the effect of family structure on four schooling outcomes for young adults: years of schooling, high school graduation, college attendance, college

graduation. The NLSY-Child data are used to examine the effect of family structure on children's cognitive and behavioral outcomes: three Peabody Individual Achievement Tests (PIAT)--reading recognition, reading comprehension, and math--and the Behavior Problems index which measures a child's anti-social behavior.

The NLSY began in 1979 with a nationally representative sample of 12,686 young adults between the ages of 14 and 21. Almost half of the observations in the NLSY (5,863) come from multiple sibling households. We work with an "NLSY sibling sample" which we define to include a subset of individuals who have siblings or stepsiblings in the NLSY. To be included in our sibling sample, individuals must have completed the 1988 Childhood Residence Calendar, have complete measures of schooling in at least one year between the 1990 and 1994 survey waves, and have at least one sibling meeting these criteria. We eliminate individuals who are adopted, or report zero years of schooling, or report more than one change in family structure in a given year of childhood.

The PSID began collecting data in 1968 on a nationally representative, longitudinal sample of 4,800 households. The PSID has followed individuals from their original families to new ones that form as a result of births, marriages, divorces, and children leaving home. Our sample consists of individuals born between 1960 and 1970 with educational outcomes observed between 1990 and 1993 and who have at least one sibling meeting these criteria. In 1985 the PSID collected retrospective data providing information on the pair-wise relationships of all individuals in a 1968 family. We use this information from the 1968-85 Relationship file to derive our measures of family structure. We eliminate individuals who are not included in the 1968-85 Relationship file, who do not have a biological parent in the PSID sample, who have no reported years of schooling, or who have no siblings meeting these criteria.

Beginning in 1986, the NLSY started collecting data biennially on all of the children born to the female NLSY respondents (the NLSY-Child data). The 1994 wave of the NLSY-Child sample contains

information from 3,464 women with children. Because children under the age of 15 make up the majority of this sample, we focus on cognitive and behavioral outcomes rather than schooling attainment. The assessment instruments we use in this study are three Peabody Individual Achievement Tests (PIAT) and the Behavior Problems index which measures a child's anti-social behavior. For all four assessments, we use the normalized percentile scores in our analysis.[2] Our sample from the NLSY-Child data is limited to children with siblings in the sample, ages 5-15 for whom we have data on age, the three PIAT assessments, and the Behavioral Problems index.

Given our focus on the effect of family structure on children's outcomes, the measurement of family structure requires explicit consideration. Previous studies have measured family structure as a dichotomous variable (e.g., does a child live with one or with both biological parents?) Dichotomous measures of family structure are unsatisfactory because family structure can change over the childhood (e.g., as the result of divorce or remarriage). Family structure measured at a child's particular age (age 14 in the NLSY) will not adequately reflect living arrangements that change during childhood. Wolfe, Haveman, Ginther, and An [1996] examine the effect of using these 'window' variable measures, conclude that one-year window variables serve as weak proxies for childhood circumstances and events, and can result in unreliable estimates. Children in multiple-sibling households may experience different family structures. For example, in blended families the youngest child may spend his or her entire childhood with both biological parents while the eldest child in the same family may be reared first by both biological parents, then by a single parent, and finally by one biological parent and a stepparent. Children living in these blended families share an environment that may have a similar impact on educational outcomes regardless of the child's biological relationship to the parents. Whether it does is, of course, an empirical question.

[2] Normalized percentile scores are derived on an age-specific basis. For the PIAT assessments, raw scores are normalized to a national distribution. For the Behavioral Problems Index, raw scores are normalized based on the survey distribution.

In our analysis we use family-based measures of family structure created from retrospective data covering the entire childhood.[3] In the PSID and NLSY, family structure is characterized as the proportion of childhood that a child lives with both biological parents and no half-siblings (traditional nuclear family), with a single biological parent (single-parent), with a biological parent who is married to a stepparent or with both biological parents and at least one half-sibling (blended families), and alternative (other) family structures.[4] In the NLSY-Child survey, family structure is defined in each year of the survey data as living with a single mother, living with both biological parents and no half-siblings, or living in a blended family--defined as living with both biological parents and a half-sibling or living with a mother who is married to a stepfather.[5] Even these definitions do not measure family structure over the entire childhood and may be subject to the 'window problem,' but because this reflects living arrangements over multiple survey years, they are presumably better than conventional, single-year measures of family structure.

We restrict our attention to outcomes for children from "stable blended families," which we define as those in which at least one sibling reports living with both biological parents for the entire childhood while at least one other sibling reports living with a stepparent.[6] We impose this restriction to obtain a blended family sample in which at least one child in each family spends his or her entire

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[3] Using the data collected by the 1988 NLSY Childhood Residence Calendar Supplement, we construct age-specific changes in family structure over an individual's entire childhood, from ages zero to 16. Using data collected in the 1968-85 PSID Family Relationship file, we construct age-specific changes in family structure over an individual's childhood from ages one to 16.

[4] We treat cohabiting biological parents as if they were married. Following the census definition, we say that a "blended" family is one "that must include at least one stepparent, stepsibling and/or half-sibling. A stepparent is the spouse of a child's biological parent but is not the child's biological parent. . . Half-siblings share only one biological parent." [Census Bureau P70-38, p.B-1]. The census defines the "traditional nuclear family" as consisting of a married couple and their biological child(ren), with no others are present in the household. The proportion of childhood in a given family structure in the NLSY is measured as the number of years in that family structure divided by 17. In most cases an individual's childhood (ages 1-16) is not entirely observed between 1968 and 1985 in the PSID sample. Thus, we define family structure as the number of years a child between the ages of 1 and 16 is observed in the sample in a given family structure divided by the total number of years the child is ages 1-16 between 1968 and 1985.

[5] Again we treat cohabiting biological parents as if they were married.

[6] Appendix A contains additional information on the identification of blended families in our sample and the definitions of the variables used in this study.

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childhood living with both biological parents. Our definition excludes "unstable" blended families that end in divorce.[7]

Table 1 reports the means and standard deviations of the variables used in the NLSY and PSID siblings sample along with the stable blended family subsamples. Almost 30 percent of the siblings in the NLSY and 48 percent of siblings in the PSID report ever living in a non-traditional family.[8] Three percent of the siblings in the NLSY (154 individuals) and eight percent in the PSID (111 individuals) lived in stable blended families.[9] Mean educational outcomes are lower in the stable blended family subsamples than for all siblings.

Table 2 reports the descriptive statistics for the NLSY-Child sample and our stable blended family subsample. There are 4,320 siblings in the sample, of whom 418 individuals live in stable blended families. Children in the NLSY-Child sample are repeatedly assessed, so we have over 10,000 child-year observations in this data set. Mean reading and math assessment scores are lower in stable blended families than for all of the siblings in the NLSY-Child sample; mean behavioral problem scores are higher.

We use these data to estimate the correlation between family structure and children's educational attainment. We make no attempt to control for the endogeneity of family structure because, as our literature review has demonstrated, the estimated results are highly sensitive to the modeling and identification assumptions employed. Instead, we focus on the robustness of the correlation between children's educational outcomes and family structure, sometimes controlling for other variables.

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[7] It also excludes families in which none of the children are the biological children of both parents (e.g., the "Brady Bunch") because we want to compare schooling outcomes of step-children in blended families with the outcomes of their half-siblings who are the biological children of both parents.

[8] The percentage of siblings living in non-traditional families is greater in the PSID because of the oversampling of disadvantaged families.

[9] Because our blended families are defined as families that remain together for the entire childhood of at least one child, these percentages are not an estimate of the percentage of children in the population who spend some portion of their childhood in a family that includes a husband, a wife, at least one stepchild, and at least one biological child of the couple.

We begin by estimating the correlation between family structure and educational outcomes using two models and the entire sample of siblings. We are motivated to take this approach by Biblarz and Raftery [1999] who show that the effect of family structure is sensitive to which control variables are included in the model. In addition to family structure, our first model includes the exogenous variables of gender and race. We exclude variables that measure inputs and behaviors chosen jointly with family structure, although several studies include such variables.[10] In order to examine the sensitivity of family structure estimates to the inclusion of other control variables, we include variables such as sibship size (number of siblings), birth order, family income, religion, and parental schooling in the second specification.

In our second approach, we compare outcomes for half-siblings within the same stable blended family. We have defined our stable blended family samples in the NLSY and PSID to ensure that each family includes at least one child reared by both biological parents until age 16.[11] If growing up with both biological parents has a substantial impact on children's educational outcomes, we would expect to find evidence of this in our stable blended family samples. That is, we would expect to find that children reared by both biological parents have better outcomes than their half-siblings who spent time in single-parent families and as stepchildren in stable blended families.

3. Empirical Results

A. The Correlation Between Family Structure and Educational Outcomes

We begin by estimating two cross-section models of the effect of family structure on schooling outcomes. Model (A) regresses schooling outcomes on variables for gender, race, an indicator for being

[10] See for example, Biblarz and Raftery [1999], Manski et al. [1992], and Lang and Zagorsky [2001].
[11] Stable blended families in the NLSY-Child are defined as at least one sibling living with both biological parents and a half-sibling in 1994.

in the disadvantaged subsample, and family structure. Model (B) adds measures for number of siblings, birth order, family income, religion, and parental schooling to Model (A). Estimates using the NLSY are presented in Table 3, and those using the PSID are presented in Table 4. All standard errors are clustered by family and adjusted using the Huber-White method to account for the correlation between observations from the same family. The models use family-based measures of family structure; all models have measures for the proportion of childhood spent in a single-parent family, blended family, or other family structure with proportion spent in a traditional nuclear family being the omitted category. We can interpret the coefficient on proportion of childhood in a given family structure as the effect on schooling of spending an additional fraction of childhood in that family structure and correspondingly less in a traditional nuclear family.

Like previous research, our OLS and probit cross-section estimates of Models (A) in both data sets show that proportion spent with a single-parent family or blended family have negative and significant effects on schooling outcomes. As additional variables are included in Model (B), we observe results similar to those in Biblarz and Raftery [1999]. The estimated effect of growing up with a single-parent attenuates and is not statistically significant in seven of the eight models estimated in Tables 3 and 4. In estimates not reported here, we find that much of the attenuation in the effect of single-parent families on educational outcomes results from the inclusion of family income in Model B. Although the size of the coefficient on the blended family variable drops as we move from Model (A) to (B), the coefficient remains negative and statistically significant in five of the eight models. Our results suggest that the estimated effect of family structure is sensitive to the inclusion of other variables in the regression.[12] After controlling for additional variables, blended families are more negatively correlated

[12] We have experimented with alternative specifications in Tables 3 and 4 and found our results to be robust. In appendix tables B.1 and B.2 we use dummy variables for family structure instead of proportion living in a particular family structure. The estimates presented in Tables 3 and 4 fit the data better than those using family structure dummies but tell the same story.

with lower educational attainment than single-parent families.

We now turn to the effects of family structure on child assessment outcomes. Table 5 presents four sets of estimates for each of four child assessment outcomes (reading recognition, reading comprehension, math, and behavior problems). In the first OLS specification, Model (A), the normalized percentile assessment scores for each outcome is regressed on variables for age, gender, race, and family structure. Model (B) adds number of siblings, religion, mother's schooling, family income, and an indicator for low birth weight to Model (A). All standard errors are clustered by family and adjusted using the Huber-White method. Family structure is measured as an indicator variable for each year an individual is in the data set. The results for Model (A) indicate that living with a single parent or a blended family significantly decreases reading and math scores, and significantly increases behavior problems. The estimated effect of family structure on assessment outcomes decreases substantially in Model (B) when additional variables are included in the regression. The results in Table 5 indicate that living with a single-parent or a blended family is negative but no longer statistically significant in all but the reading recognition and behavior problems regressions.

B. Blended Families Estimates

We next consider educational outcomes in stable blended families. We begin with schooling outcomes. Because our stable blended-family sample is small in each data set, we combine the blended family subsamples from the PSID and NLSY for this analysis. Appendix Tables B.3 through B.6 contain separate analyses for the PSID and NLSY blended family subsamples. We begin with simple tests of differences in mean schooling outcomes. The top panel of Table 6 tests the null hypothesis of no difference in mean schooling outcomes between siblings in stable blended families and siblings from traditional nuclear families in the combined PSID-NLSY sample. For all four schooling outcomes we

reject the null hypothesis of no difference in schooling outcomes. Mean schooling outcomes in the stable blended-family sample are substantially and significantly lower than those for children from traditional nuclear families.

Next, we compare the mean educational outcomes for joint biological children in stable blended families with the children in traditional nuclear families in the middle panel of Table 6. In three of the four outcomes joint biological children from blended families have significantly lower educational attainment. Finally, we evaluate whether schooling outcomes within the stable blended-family sample differ for the stepchildren and the joint biological children. These results are presented in the bottom panel of Table 6. For all four schooling outcomes the children growing up with both biological parents in stable blended families do better than the step-children, but the differences in mean schooling outcomes are small relative to the difference between their schooling outcomes and those of children in traditional nuclear families. Furthermore, the difference between the stepchildren and the joint biological children in stable blended families is not statistically significant.

In Table 7, we estimate two models of schooling using the stable blended-family sample.[13] Model (A) is a parsimonious model where family structure is measured as proportion of childhood in a non-intact family. We use this variable because it captures the differences between the step and joint biological children in the blended families. Model (B) includes additional family background characteristics. All standard errors are adjusted using the Huber-White method to account for the correlation between observations from the same family. In both models, the proportion of childhood

[13] Only three of the four schooling outcomes are presented in Table 6 because only 14 individuals in the blended-family sample graduated from college.

spent in a non-intact family has a negative and statistically insignificant effect on educational attainment.[14]

Using family-based measures of family structure, estimates of the effect of living with a single parent differ significantly depending on the variables included in the model. Regardless of the specification employed, however, the effect of living in a blended family remains negative and significant. When we examine the stable blended families sample, the differences in educational outcomes between the joint biological and stepchildren is small and both types of children in blended families do poorly when compared with children in traditional nuclear families. The tests of mean differences indicate that growing up in a stable blended family has a negative impact on schooling outcomes for both the stepchildren and the joint biological children. In the stable blended family regressions, the estimated effect of living without both biological parents is negative but no longer significant.

We now turn to the effect of family structure on the four child assessment outcomes. Table 8 reports results of tests of mean differences in the four assessment outcomes for children in the NLSY-Child sample. The first panel in Table 8 shows statistically significant differences in mean outcomes between the children in the stable blended family sample and children from traditional nuclear families in the NLSY-Child sample. For all four outcomes, we reject the null hypothesis of no difference in mean scores across the two groups. The second panel of Table 8 compares the mean outcomes for joint biological children in stable blended families with children from traditional nuclear families. We again see large differences: the children in traditional nuclear families have substantially better outcomes.

[14] This result holds when the models are estimated separately for the PSID and NLSY. See Appendix Tables B.5 and B.6.

The bottom panel of Table 8 reports mean outcomes within the stable blended family sample, comparing the stepchildren ("her children") with the joint biological children of both parents ("their children"). We find that stepchildren have lower mean scores on reading and math assessments and higher mean scores on behavioral problems. When we test the null hypothesis that there is no mean differences in outcomes between "her children" and "their children," we again fail to reject the null hypothesis: we find no significant difference in mean outcomes of the step children and the joint biological children in stable blended- families.

Finally, in Table 9 we present regression estimates of the effect of family structure on children's assessments using the NLSY-Child stable blended- family sample. Results for Models (A) and (B) are presented in the table for the four assessments. All standard errors are clustered by family and adjusted using the Huber-White method to account for the correlation between observations from the same family. We find that living in a single-parent or a blended family has a positive but insignificant effect on most of the PIAT assessments. Only one of the family structure variables is statistically significant in Table 9: living with a single parent has a positive and statistically significant effect on reading comprehension, even after controlling for family background characteristics.

Tables 8 and 9 indicate that stable blended family child assessment outcomes differ from the sample of all remaining siblings. Comparing the effect of family structure using the stable blended-family sample, we find that the estimated coefficients on the family structure variables often change signs and generally become statistically insignificant.

Our estimates using stable blended families show that outcomes for both types of children in blended families, stepchildren and their half-siblings who are the joint biological children of both parents, are substantially worse than for children reared in traditional nuclear families. Because these estimated correlations are merely the result of regressing one endogenous variable on another, however,

they do not provide a basis for policy. In the next section we argue for reformulating the family structure question by specifying an explicit, policy-relevant counterfactual.

4. Counterfactuals

Any precisely specified counterfactual will clarify the family structure question, but economists are likely to favor policy-oriented counterfactuals, while marriage counselors and advice columnists are likely to favor personal counterfactuals. An example illustrates the distinction.

Suppose your cousin Carol tells you she is thinking of divorcing her husband and asks: "What would be the effect on my children?" To answer cousin Carol's question requires us to predict what would happen to her children under each decision. If she divorces, would she get custody of the children? Would she remarry? Would she increase her hours of work? Would she have additional children? We should certainly condition our answer to cousin Carol's question on all of our information about her and her children, including what we know about their personalities. We also need to predict outcomes for the children if she decides to remain in the marriage. If we have information about the quality of the marriage, we should clearly use it in predicting how the children would fare. Unlike the standard question -- "What is the effect of family structure on outcomes for children?" -- Cousin Carol's question is well-posed. It is not, however, policy relevant.

As an example of a policy-relevant counterfactual, we propose the removal of the marriage penalty that effectively prevents two-earner couples from using the earned-income tax credit (EITC). Other policy-relevant counterfactuals include removal of the marriage penalty from the federal income tax, voluntary or compulsory counseling for couples prior to marriage or for couples filing for divorce, and changes in the legal rules governing marriage, divorce, and child support. To estimate the effects of any policy change, we must specify it in detail. For example, in the case of the EITC marriage penalty, we must specify how its

removal is financed. The easiest assumption is that the government finances it by increasing taxes on nonparents by enough to keep the removal of the marriage penalty revenue neutral.

Gruber [2000] investigates the effects of changes in state divorce laws on outcomes for children. The timing of the "divorce revolution" -- the transition from fault based divorce, to divorce by mutual consent, to unilateral divorce -- varied from state to state. Using this state variation, Gruber estimates the effect of unilateral divorce on outcomes for children. He finds that unilateral divorce has a negative and significant effect on children's educational attainment. Gruber reviews the family structure literature, which generally claims that divorce has adverse effects on outcomes for children. He criticizes that literature for failing to recognize and deal with the endogeneity of family structure. Although Gruber does not use the language of counterfactuals, unilateral divorce is clearly a policy relevant counterfactual.

The removal of the EITC marriage penalty encourages the formation and stability of married couple families. Its family structure effects, as opposed to its resource effects, are limited to children whose parents respond to the change in incentives. (A penalty on single parent families and cohabitating couples with children would encourage the formation and stability of married couple families without allowing them to experience resource effects.) Ignoring fertility effects, this means children who, without the policy change, would live in cohabiting or single parent families but who, with the policy change, would live in married couple families (i.e., traditional nuclear or blended families). Policy analysis begins with the effect of the policy change on each of the four family structures.[15] Descriptive regressions suggest that outcomes for

[15] Gruber [2000] investigates the effect of divorce law changes on child outcomes. The transition from bilateral to unilateral divorce has complicated effects on family structure because, as Gruber recognizes, divorce law changes affect not only bargaining within marriage but also entry into marriage.

children in blended families are less favorable than outcomes for children in single parent families. If these correlations reflect causal relationships, then the removal of the marriage penalty will benefit some children and harm others.

As Heckman, Lochner, and Taber [1998a, 1998b] emphasize, the general equilibrium effect of policies that apply to the entire population cannot be inferred directly from their effects on individuals' behavior. Observational data and data from experimental programs that apply to a sample population provide a basis for estimating individuals' responses, but calculating general equilibrium effects requires more elaborate theory. In the case of the EITC, the general equilibrium effects operate through labor markets and marriage markets. If changes in incentives induce a substantial number of mothers and fathers increase their work hours, we would expect a decrease in the wages at the lower end of the skill distribution. If changes in incentives induce a substantial number of individuals who would not otherwise marry to enter marriage, we would expect the average "quality" of those marriages to be lower than the average quality of marriages before the change in incentives. The general equilibrium effects of removing the EITC marriage penalty may differ substantially from the partial equilibrium effects. In their study of college tuition subsidies, Heckman, Lochner and Taber find that the general equilibrium effects differ from the partial equilibrium effects by an order of magnitude.

Neither stylized facts nor descriptive regressions provide defensible estimates of even the partial equilibrium effects of eliminating the marriage penalty. As the marriage penalty counterfactual illustrates, designers of policy interventions need to know more about the determinants of outcomes for children than they can learn from stylized facts and descriptive regressions.

5. Conclusion

In this paper we make two contributions. First, we augment the stock of stylized facts and descriptive regressions which summarize the correlations between family structure and children's educational outcomes. Second, we argue that stylized facts and descriptive regressions cannot support either scientific conclusions or policy analysis, and that explicit counterfactuals are required. An explicit counterfactual clarifies the question, "What is the effect of family structure on outcomes for children?"

Our contribution to the stock of stylized facts concerns blended families. It is well-known that, on average, children reared in traditional nuclear families have substantially better educational outcomes than stepchildren from stable blended families. We find that children reared in traditional nuclear families also have substantially better outcomes than the joint biological children from stable blended families. We also find that, within stable blended families the difference between the joint biological children and the stepchildren is neither substantial nor statistically significant.

Controlling not only for family structure but also for variables such as mothers' education and family income, descriptive regressions reveal a different pattern of family structure effects than the stylized facts which control only for family structure. With additional controls, the effect of family structure falls substantially and often loses statistical significance. In particular, the effect of living in a single-parent family is no longer statistically significant.

How can we understand these findings? Four explanations, separately or in combination, might account for at least some of them. First, family structure may well be a proxy for other variables that affect outcomes for children. To the extent that family structure is correlated with family resources devoted to children or time devoted to children, if descriptive regressions do not control for these variables, then family structure will pick up their effects. Because descriptive regressions do not correspond to either

structural or reduced form relationships, there is no principled way to argue about which variables ought to be included and which excluded from a descriptive regression.[16]

The second explanation is stress. Although the Brady Bunch was preternaturally happy, the presence of stepchildren is often described as a source of stress. The sociologist Andrew Cherlin [1978] characterized remarriage as an "incomplete institution," arguing that roles in such families lack clear definition; for example, there is no consensus about when it is appropriate for a stepfather to discipline a stepchild. Most discussions of blended families focus on outcomes for stepchildren. Few researchers have discussed the joint biological children in blended families, although Gennetian [2001] is an important exception.[17] The stresses and strains of blended families -- the presence of stepchildren, not necessarily the behavior of stepchildren -- might affect not only outcomes for the stepchildren but also outcomes for the joint biological children. Stress might explain why children in blended families have worse educational outcomes than children in other two-parent families.

The third explanation hinges on the allocation of time and other resources within blended families. If mothers allocate resources among children within blended families, and if all of the children are hers, as they usually are, then she may use her ability to allocate resources to "compensate" for any negative effects of family structure on stepchildren. This explanation highlights the fact that observed educational outcomes are not "pure" family structure effects, whatever that might mean, but also reflect the effects of any compensating or reinforcing family allocation decisions.

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[16] The discussion of the effect of family resources on outcomes for children provides an example. The papers in Duncan and Brooks-Gunn [1996] generally argue that increases in family resources have positive effects on child outcomes; Mayer [1997] argues that most of the observed correlation between family resources and child outcomes reflects unobserved heterogeneity; Blau [1999] provides a balanced summary of the discussion. The underlying difficulty is that the discussion of family resources effects, like the discussion of family structure effects, requires a well-specified counterfactual (e.g., an increase in cash welfare benefits; winning the lottery), but discussions of counterfactuals are conspicuously absent.

[17] Evolutionary psychology suggests that stepchildren will be treated differently than biological children in blended families. Daly and Wilson [1999] and Popenoe [1994] draw on evolutionary psychology in their discussions of stepchildren. Booth and Dunn [1994], the edited volume in which Popenoe [1994] appears, contains several papers critical of Popenoe.

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The fourth explanation is heterogeneity. Observed heterogeneity draws our attention to the control variables, and the way in which investigators choose which of the available variables to control for. The descriptive regressions show that the correlations between family structure and outcomes for children fall substantially and often lack statistical significance when we control for variables such as mothers' education and family income. Unobserved heterogeneity draws our attention to differences in unobserved behaviors that may influence outcomes for children but also to differences in preferences and ability that influence the choice of family structure, education, and childbearing. Parents in blended families and single-parent families that result from divorce or nonmarital fertility may differ from parents in traditional nuclear families in unobserved as well as observed characteristics. Even if family structure has no "direct" or "causal" effect on outcomes for children, unobserved heterogeneity and selection could account for the association between outcomes for children and family structure summarized in the stylized facts and descriptive regressions.

Our second contribution is to argue the need to reformulate the family structure question using an explicit counterfactual. As an example of a reformulation of the question "What is the effect of family structure on outcomes for children?" we suggest a counterfactual based on eliminating the EITC marriage penalty. Our analysis also demonstrates, if another demonstration were needed, that what we see depends on the lens we look through -- the classification scheme we bring to the analysis. Classification schemes illuminate some relationships and obscure others. Furthermore, as Bowker and Star [1999] emphasize, classification schemes themselves often become visible only when alternatives appear. Using a family-based rather than a child-based classification of family structure, we see the children in blended families -- the step children and the joint biological children -- in a new light.

Any explicit counterfactual clarifies the family structure question, which, interpreted literally, asks about the effect of one endogenous variable on another. The elimination of the EITC marriage

penalty exemplifies the type of counterfactual we have in mind. Its elimination would presumably provide incentives for individuals to enter marriage and remain married or, following divorce, to remarry. The marriage penalty counterfactual draws attention to the parents whom the changes in incentives would induce to marry or remain married, and to outcomes for their children.

Our results imply cautions for policy. Policies intended to improve outcomes for children often focus on family structure, which is easy to observe and, some believe, relatively easy to influence through tax and welfare policy, couple counseling, or legal rules governing marriage, divorce, and child support. If the stylized facts about the relationship between outcomes for children and family structure reflect the influences of other variables, then policies that affect family structure may have little or no effect on outcomes for children. Our blended family results and our descriptive regressions results call into question the causal interpretation of the stylized facts about the relationship between family structure and outcomes for children.

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Table 1
Descriptive Statistics NLSY and PSID Sibling Samples

	NLSY		PSID	
Variable	**All Siblings**	**Half Sibs**	**All Siblings**	**Half Sibs**
Years of Schooling	12.919	12.318	12.782	12.523
	(2.273)	(1.839)	(1.871)	(1.773)
High School Graduate = 1	0.854	0.786	0.851	0.838
	(0.353)	(0.412)	(0.356)	(0.370)
College Attendance = 1	0.416	0.292	0.388	0.360
	(0.493)	(0.456)	(0.488)	(0.482)
College Graduate = 1	0.129	0.026	0.135	0.090
	(0.335)	(0.160)	(0.342)	(0.288)
Proportion Lived in Traditional Family	0.819	0.160	0.570	0.053
	(0.325)	(0.270)	(0.479)	(0.194)
Proportion Lived with Single Parent	0.114	0.129	0.238	0.081
	(0.251)	(0.236)	(0.376)	(0.209)
Proportion Lived in Blended Family	0.059	0.701	0.176	0.858
	(0.194)	(0.363)	(0.335)	(0.294)
Proportion Lived in Other Family Structure	0.007	0.010	0.015	0.009
	(0.053)	(0.063)	(0.087)	(0.066)
Lived in Traditional Family Continuously = 1	0.698		0.524	
	(0.459)		(0.500)	
Lived in Single Parent Family = 1	0.164	0.071	0.181	0.045
	(0.370)	(0.258)	(0.385)	(0.208)
Lived in Blended Family = 1	0.107	0.896	0.254	0.937
	(0.309)	(0.306)	(0.435)	(0.244)
Lived in Other Family Structure = 1	0.031	0.032	0.041	0.018
	(0.173)	(0.178)	(0.199)	(0.134)
Female = 1	0.480	0.461	0.507	0.550
	(0.500)	(0.500)	(0.500)	(0.500)
African American = 1	0.292	0.571	0.473	0.441
	(0.455)	(0.496)	(0.499)	(0.499)
Hispanic = 1	0.165	0.104	0.033	
	(0.371)	(0.306)	(0.180)	
Birth Order	3.330	3.494	3.636	3.459
	(2.221)	(2.124)	(2.480)	(2.396)
Number of Siblings	4.366	4.916	3.863	3.598
	(2.653)	(2.190)	(1.655)	(1.290)
Practiced Religion = 1	0.954	0.929	0.982	1.000
	(0.210)	(0.258)	(0.134)	(0.000)
Family Income	17793	15922	34314	31427
	(13648)	(12897)	(22155)	(12340)

Note: Standard Deviations in Parentheses.

Table 1
Descriptive Statistics NLSY and PSID Sibling Samples (continued)

	NLSY		PSID	
Variable	All Siblings	Half Sibs	All Siblings	Half Sibs
Mother High School Graduate = 1	0.358	0.286	0.356	0.396
	(0.479)	(0.453)	(0.479)	(0.491)
Mother Some College = 1	0.160	0.078	0.103	
	(0.367)	(0.269)	(0.304)	
Mother's Schooling Missing = 1	0.056	0.065	0.024	0.018
	(0.230)	(0.247)	(0.152)	(0.134)
Father High School Graduate = 1	0.277	0.227	0.211	0.216
	(0.447)	(0.420)	(0.408)	(0.414)
Father Some College = 1	0.208	0.097	0.150	0.072
	(0.406)	(0.297)	(0.357)	(0.260)
Father's Schooling Missing = 1	0.130	0.240	0.150	
	(0.336)	(0.429)	(0.357)	
Sample Size	4764	154	1980	111

Table 2
Descriptive Statistics 1986-1994 NLSY Children

	All Siblings		Stable Blended Families	
Variable	Number Of Obs.	Mean	Number of Obs.	Mean
PIAT- Reading Recognition Percentile Score	10803	52.990 (27.931)	1031	49.890 (27.522)
PIAT-Reading Comprehension Percentile Score	8799	50.839 (27.745)	822	47.658 (27.506)
PIAT-Math Percentile Score	10803	45.141 (26.335)	1031	42.172 (25.967)
Behavioral Problems Index Percentile Score	10803	64.347 (26.564)	1031	68.117 (24.805)
Lived in Traditional Family	10803	0.475 (0.499)	1031	
Lived with Single Mother	10803	0.377 (0.485)	1031	0.228 (0.420)
Lived in Blended Family	10803	0.148 (0.355)	1031	0.772 (0.420)
Age	10803	9.064 (2.626)	1031	9.129 (2.681)
Real Family Income	9165	31907 (60310)	877	38391 (78272)
Female = 1	4320	0.482 (0.500)	418	0.502 (0.501)
African American = 1	4320	0.344 (0.475)	418	0.397 (0.490)
Hispanic = 1	4320	0.215 (0.411)	418	0.208 (0.406)
Number of Siblings	4320	2.139 (1.169)	418	2.656 (1.396)
Practiced Religion = 1	4320	0.406 (0.491)	418	0.385 (0.487)
Mother High School Graduate = 1	4320	0.488 (0.500)	418	0.495 (0.501)
Mother Some College = 1	4320	0.272 (0.445)	418	0.251 (0.434)
Low Birth Weight	4320	0.089 (0.285)	418	0.105 (0.307)

Note: Standard Deviations in Parentheses.

Table 3
NLSY Sibling Estimates of the Effect of Family Structure on Schooling Outcomes

	Years of Schooling		High School Graduate		College Attendance		College Graduate	
	OLS	OLS	Probit	Probit	Probit	Probit	Probit	Probit
Variable	(A)	(B)	(A)	(B)	(A)	(B)	(A)	(B)
Intercept	13.269*	8.378*	1.219*	-1.874*	-0.085~	-2.499*	-0.964*	-3.013*
	(0.074)	(0.562)	(0.047)	(0.412)	(0.039)	(0.380)	(0.045)	(0.482)
Disadvantaged	-0.914*	-0.333*	-0.485*	-0.198~	-0.403*	-0.137~	-0.295*	-0.054
Oversample	(0.116)	(0.111)	(0.079)	(0.081)	(0.059)	(0.069)	(0.065)	(0.088)
Female	0.417*	0.437*	0.244*	0.311*	0.223*	0.250*	0.165*	0.208*
	(0.066)	(0.062)	(0.047)	(0.055)	(0.039)	(0.045)	(0.049)	(0.056)
African-American	0.101	0.672*	0.199~	0.468*	0.058	0.383*	-0.092	0.148
	(0.120)	(0.112)	(0.088)	(0.092)	(0.065)	(0.075)	(0.068)	(0.086)
Hispanic	-0.262	0.454*	-0.078	0.197~	-0.033	0.366*	-0.308*	-0.041
	(0.149)	(0.141)	(0.090)	(0.097)	(0.077)	(0.090)	(0.096)	(0.116)
Birth Order		0.050~		0.029		0.019		-0.006
		(0.024)		(0.018)		(0.017)		(0.024)
Number of Siblings		-0.123*		-0.067*		-0.064*		-0.028
		(0.022)		(0.016)		(0.016)		(0.021)
Religion		0.494*		0.447*		0.176		0.050
		(0.188)		(0.116)		(0.115)		(0.151)
Family Income 1979		0.352*		0.240*		0.176*		0.162*
		(0.052)		(0.040)		(0.036)		(0.046)
Mother High School		0.551*		0.282*		0.289*		0.191~
Graduate		(0.094)		(0.086)		(0.064)		(0.082)
Mother Some College		1.266*		0.405*		0.778*		0.396*
		(0.131)		(0.129)		(0.087)		(0.099)
Mother's Schooling		-0.163		-0.174		-0.050		-0.067
Missing		(0.145)		(0.111)		(0.108)		(0.170)
Father High School		0.397*		0.411*		0.198*		0.122
Graduate		(0.096)		(0.083)		(0.066)		(0.081)
Father Some College		1.545*		0.851*		0.833*		0.515*
		(0.124)		(0.143)		(0.080)		(0.090)
Father's Schooling		0.080		0.091		0.021		-0.136
Missing		(0.114)		(0.086)		(0.083)		(0.125)
Proportion with Single	-0.674*	-0.235	-0.417*	-0.253~	-0.356*	-0.122	-0.374*	-0.194
Parent	(0.159)	(0.157)	(0.106)	(0.119)	(0.092)	(0.107)	(0.122)	(0.144)
Proportion in Blended	-0.894*	-0.517*	-0.259~	-0.152	-0.562*	-0.322~	-0.965*	-0.884*
Family	(0.169)	(0.161)	(0.130)	(0.140)	(0.120)	(0.135)	(0.217)	(0.247)
Proportion without	-1.459~	-0.641	-0.678	-0.460	-0.884	-0.494	-0.310	0.290
Parents	(0.587)	(0.615)	(0.369)	(0.451)	(0.461)	(0.515)	(0.520)	(0.589)
Sample Size	4674	3817	4674	3817	4674	3817	4674	3817
R-Squared	0.074	0.288	0.047	0.162	0.036	0.162	0.044	0.115

Notes: Robust standard errors clustered by family in parentheses. $p < .05$ = ~ and $p < .01$ = *. R-Squared for probit is a pseudo-R-squared. Sample size drops between models (A) and (B) because of missing family income data for some observations.

Table 4
PSID Sibling Estimates of the Effect of Family Structure on Schooling Outcomes

	Years of Schooling		High School Graduate		College Attendance		College Graduate	
	OLS	OLS	Probit	Probit	Probit	Probit	Probit	Probit
Variable	(A)	(B)	(A)	(B)	(A)	(B)	(A)	(B)
Intercept	13.330*	5.691*	1.432*	-2.551~	-0.110	-6.414*	-0.686*	-5.819*
	(0.106)	(1.364)	(0.088)	(1.216)	(0.068)	(1.054)	(0.078)	(1.417)
Disadvantaged	-0.605*	-0.071	-0.294~	-0.031	-0.310*	0.043	-0.379*	-0.042
Oversample	(0.151)	(0.131)	(0.119)	(0.121)	(0.096)	(0.097)	(0.119)	(0.123)
Female	0.282*	0.311*	0.066	0.100	0.297*	0.356*	0.130	0.133
	(0.083)	(0.076)	(0.078)	(0.080)	(0.060)	(0.064)	(0.072)	(0.078)
African-American	-0.190	0.459*	0.024	0.420*	-0.099	0.363*	-0.358*	0.051
	(0.153)	(0.141)	(0.123)	(0.129)	(0.100)	(0.104)	(0.124)	(0.135)
Hispanic	-0.182	0.466	-0.207	0.178	0.095	0.544*	-0.204	0.101
	(0.368)	(0.329)	(0.249)	(0.265)	(0.195)	(0.195)	(0.317)	(0.322)
Birth Order		-0.020		-0.030		-0.015		0.001
		(0.021)		(0.020)		(0.019)		(0.026)
Number of Siblings		-0.152*		-0.084~		-0.113*		-0.143*
		(0.035)		(0.035)		(0.031)		(0.040)
Religion		-0.466		-0.404		-0.327		-0.527
		(0.485)		(0.348)		(0.320)		(0.394)
Family Income 1979		0.725*		0.406*		0.602*		0.525*
		(0.121)		(0.112)		(0.095)		(0.127)
Mother High School		0.337*		0.357*		0.157		0.047
Graduate		(0.106)		(0.106)		(0.085)		(0.111)
Mother Some College		1.196*		0.949*		0.805*		0.484*
		(0.180)		(0.248)		(0.134)		(0.163)
Mother's Schooling		0.007		0.054		0.000		0.148
Missing		(0.280)		(0.281)		(0.279)		(0.275)
Father High School		0.321~		0.223		0.282*		0.150
Graduate		(0.124)		(0.127)		(0.096)		(0.126)
Father Some College		0.908*		0.326		0.630*		0.545*
		(0.176)		(0.209)		(0.119)		(0.149)
Father's Schooling		0.180		0.051		0.144		0.106
Missing		(0.186)		(0.160)		(0.152)		(0.244)
Proportion with Single	-0.556*	-0.054	-0.532*	-0.294	-0.323*	0.059	-0.454*	-0.165
Parent	(0.145)	(0.193)	(0.129)	(0.165)	(0.108)	(0.151)	(0.150)	(0.219)
Proportion in Blended	-0.483*	-0.234	-0.341*	-0.308~	-0.145	0.034	-0.423*	-0.284~
Family	(0.160)	(0.140)	(0.128)	(0.128)	(0.104)	(0.103)	(0.132)	(0.134)
Proportion without	-1.355~	-0.409	-1.152~	-0.706	-0.598	0.119	-1.235	-0.699
Parents	(0.565)	(0.488)	(0.499)	(0.485)	(0.457)	(0.445)	(0.905)	(0.861)
Sample Size	1980	1980	1980	1980	1980	1980	1980	1980
Adjusted R-Squared	0.084	0.252	0.049	0.125	0.041	0.159	0.094	0.199

Notes: Robust standard errors clustered by family in parentheses. p< .05 = ~ and p< .01 = *. R-Squared for probit is a pseudo-R-squared.

.Table 5

NLSY-Child Sibling Estimates of the Effect of Family Structure on Assessment Outcomes

	Reading Recognition		Reading Comprehension		Math Test Scores		Behavioral Problems Index	
	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS
Variable	**(A)**	**(B)**	**(A)**	**(B)**	**(A)**	**(B)**	**(A)**	**(B)**
Intercept	65.551*	21.234*	90.458*	49.054*	56.728*	13.991~	57.020*	99.394*
	(1.281)	(5.817)	(1.296)	(6.753)	(1.139)	(5.549)	(1.317)	(6.629)
Age	-0.798*	-0.801*	-3.430*	-3.244*	-0.244~	-0.183	0.707*	0.677*
	(0.124)	(0.126)	(0.122)	(0.131)	(0.106)	(0.113)	(0.113)	(0.121)
Female	6.340*	6.342*	3.708*	3.551*	0.793	0.627	-5.085*	-4.558*
	(0.786)	(0.771)	(0.761)	(0.732)	(0.706)	(0.703)	(0.725)	(0.753)
African-American	-8.026*	-6.288*	-9.098*	-7.256*	-12.752*	-11.431*	0.747	-0.655
	(1.215)	(1.187)	(1.158)	(1.142)	(1.083)	(1.090)	(1.206)	(1.279)
Hispanic	-9.083*	-6.162*	-7.845*	-4.916*	-11.938*	-9.642*	-0.303	-1.824
	(1.400)	(1.284)	(1.330)	(1.221)	(1.243)	(1.171)	(1.374)	(1.441)
Number of Siblings		-2.403*		-2.198*		-1.423*		0.057
		(0.491)		(0.451)		(0.427)		(0.485)
Religion		2.147~		1.719~		0.572		0.226
		(0.840)		(0.818)		(0.762)		(0.853)
Family Income		3.776*		3.288*		3.611*		-3.705*
		(0.560)		(0.657)		(0.529)		(0.640)
Mother High School Graduate		7.033*		7.670*		6.132*		-3.910*
		(1.294)		(1.287)		(1.103)		(1.445)
Mother Some College		14.599*		13.825*		12.108*		-4.392*
		(1.483)		(1.480)		(1.338)		(1.647)
Low Birth Weight		-4.570*		-4.371*		-3.470*		2.277
		(1.604)		(1.544)		(1.251)		(1.432)
Lives in Blended Family	-4.360*	-3.099~	-2.872~	-1.970	-2.541~	-1.786	5.276*	4.012*
	(1.422)	(1.410)	(1.383)	(1.343)	(1.251)	(1.238)	(1.270)	(1.356)
Lives with Single Mother	-7.772*	-1.665	-7.028*	-1.842	-5.917*	-0.740	6.430*	2.138
	(1.087)	(1.138)	(1.058)	(1.178)	(0.978)	(1.026)	(1.104)	(1.327)
Sample Size	10803	9109	8799	7424	10803	9109	10803	9109
R-Squared	0.071	0.148	0.155	0.220	0.082	0.141	0.030	0.046

Notes: Robust standard errors clustered by family in parentheses. p< .05 = ~ and p< .01 = *. R-Squared for probit is a pseudo-R-squared. Estimates use all observations without missing data.

Table 6
Tests of Mean Differences in PSID and NLSY Sibling Sample

Test: Mean Outcome Half-Siblings in Stable Blended Families v. Siblings in Traditional Families

Outcome	Mean Half-Siblings	Mean Traditional Families	Test Statistic	P-value
Years of Schooling	12.403	13.131	**6.256**	0.000
High School Graduate	0.807	0.887	**3.202**	0.002
College Attendance	0.321	0.456	**4.542**	0.000
College Graduation	0.053	0.161	**7.255**	0.000
Sample Size	265	4301		

Test: Mean Outcome in Traditional families v. Joint Biological in Stable Blended Family Sample

Outcome	Mean Joint Biological	Mean Traditional	Test Statistic	P-value
Years of Schooling	12.508	13.131	**4.234**	0.000
High School Graduate	0.855	0.887	0.994	0.322
College Attendance	0.339	0.456	**2.699**	0.008
College Graduation	0.040	0.161	**6.470**	0.000
Sample Size	124	4301		

Test: Mean Outcome Joint Biological v. Stepchild in Stable Blended Family Sample

Outcome	Mean Joint Biological	Mean Stepchild	Test Statistic	P-value
Years of Schooling	12.312	12.508	0.891	0.374
High School Graduate	0.766	0.855	1.858	0.064
College Attendance	0.305	0.339	0.584	0.560
College Graduation	0.064	0.040	-0.8633	0.389
Sample Size	141	124		

Notes: Traditional defined as observed in the survey as always living with both biological parents. Stepchild defined as ever living with a stepparent. Numbers in **Bold** are statistically significant.

Table 7
PSID and NLSY Blended Family Sample Estimates
of the Effect of Family Structure on Educational Outcomes

	Years of Schooling		High School Graduate		College Attendance	
	OLS	OLS	Probit	Probit	Probit	Probit
Variable	(A)	(B)	(A)	(B)	(A)	(B)
Intercept	12.036*	10.743*	0.895*	0.145	-0.897*	-1.226*
	(0.311)	(0.648)	(0.250)	(0.540)	(0.230)	(0.365)
PSID = 1	0.259	0.240	0.250	0.044	0.161	0.208
	(0.304)	(0.342)	(0.255)	(0.292)	(0.206)	(0.237)
Disadvantaged	0.137	0.131	-0.151	-0.143	0.255	0.293
Oversample	(0.279)	(0.276)	(0.257)	(0.253)	(0.216)	(0.211)
Female	0.331	0.293	0.056	0.040	0.442*	0.464*
	(0.221)	(0.224)	(0.172)	(0.185)	(0.165)	(0.174)
African-American	0.270	0.403	0.266	0.389	0.052	0.148
	(0.323)	(0.325)	(0.284)	(0.282)	(0.223)	(0.231)
Hispanic	0.181	0.236	-0.324	-0.421	-0.006	0.023
	(0.692)	(0.748)	(0.442)	(0.476)	(0.476)	(0.492)
Birth Order		0.067		0.063		0.034
		(0.075)		(0.065)		(0.047)
Number of Siblings		-0.067		-0.027		-0.036
		(0.078)		(0.067)		(0.065)
Religion		0.947~		0.512		
		(0.464)		(0.459)		
Mother High School		0.213		0.395		0.09
Graduate		(0.281)		(0.260)		(0.203)
Mother Some College		1.061		0.161		1.138*
		(0.549)		(0.428)		(0.419)
Mother's Schooling		0.220		0.088		0.630
Missing		(0.605)		(0.489)		(0.434)
Father High School		0.658~		0.324		0.436~
Graduate		(0.304)		(0.278)		(0.198)
Father Some		0.836		0.415		0.529
College		(0.493)		(0.580)		(0.347)
Father's Schooling		0.092		-0.348		-0.027
Missing		(0.373)		(0.306)		(0.342)
Proportion in	-0.330	-0.231	-0.381	-0.279	-0.130	-0.081
Non-intact Family	(0.274)	(0.292)	(0.200)	(0.213)	(0.195)	(0.222)
Sample Size	265	265	265	265	265	265
Adjusted R-Squared	0.028	0.103	0.034	0.089	0.037	0.083

Notes: Robust standard errors clustered by family in parentheses. p< .05 = ~ and p< .01 = *. R-Squared for probit is a pseudo-R-squared

Table 8
Tests of Mean Differences NLSY-Child Sibling Sample

Test: Mean Outcome Half-Siblings in Stable Blended Families v. Siblings in Traditional Families

Outcome	Mean Half-Siblings	Mean Traditional Families	Test Statistic	P-value
PIAT-Reading Recognition	49.369	57.896	**6.364**	0.000
PIAT-Reading Comprehension	46.838	56.696	**6.945**	0.000
PIAT-Math	41.627	50.333	**6.830**	0.000
Behavioral Problems Index	67.232	58.959	**6.167**	0.000
Sample Size	418	1861		

Test: Mean Outcome in Traditional families v. Joint Biological in Stable Blended Family Sample

Outcome	Mean Joint Biological	Mean Traditional	Test Statistic	P-value
PIAT-Reading Recognition	49.615	57.896	**4.485**	0.000
PIAT-Reading Comprehension	49.645	56.696	**3.333**	0.001
PIAT-Math	42.025	50.333	**4.702**	0.000
Behavioral Problems Index	65.559	58.958	**3.519**	0.000
Sample Size	199	1861		

Test: Mean Outcome Joint Biological v. Stepchildren in Stable Blended Families

Outcome	Mean Joint Biological	Mean Stepchildren	Test Statistic	P-value
PIAT-Reading Recognition	49.615	49.145	0.191	0.848
PIAT-Reading Comprehension	49.645	44.994	1.715	0.087
PIAT-Math	42.025	41.264	0.334	0.738
Behavioral Problems Index	65.559	68.753	1.413	0.159
Sample Size	199	219		

Notes: Tests performed on average assessment scores. Traditional defined as observed in the survey as always living with both biological parents. Stepchild defined as ever living with a stepparent. Numbers in **Bold** are statistically significant.

Table 9
NLSY-Child Blended Family Estimates of the Effect of Family Structure on Assessment Outcomes

	Reading Recognition		Reading Comprehension		Math Test Scores		Behavioral Problems Index	
	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS
Variable	(A)	(B)	(A)	(B)	(A)	(B)	(A)	(B)
Intercept	62.531*	22.869	87.854*	26.162	53.486*	2.933	65.419*	104.838*
	(3.757)	(18.321)	(3.855)	(17.111)	(3.240)	(15.943)	(3.331)	(17.025)
Age	-1.380*	-1.403*	-3.957*	-3.817*	-0.417	-0.406	0.985*	0.786~
	(0.485)	(0.516)	(0.417)	(0.443)	(0.323)	(0.369)	(0.306)	(0.355)
Female	5.300~	6.140~	3.385	3.906	0.171	-0.535	-6.395*	-6.666*
	(2.421)	(2.572)	(2.306)	(2.330)	(2.058)	(2.085)	(1.987)	(2.017)
African-American	-6.574	-6.245	-7.827~	-7.285~	-12.757*	-13.249*	-4.441	-4.006
	(4.053)	(3.980)	(3.753)	(3.569)	(3.403)	(3.327)	(3.052)	(4.015)
Hispanic	-9.375~	-6.098	-8.939~	-4.708	-11.253*	-8.563~	-4.992	-6.063
	(4.107)	(3.923)	(3.592)	(3.187)	(3.578)	(3.492)	(3.576)	(4.047)
Number of Siblings		-3.705*		-2.853~		-1.127		0.368
		(1.384)		(1.396)		(0.965)		(1.399)
Religion		2.743		1.332		1.326		3.604
		(3.257)		(3.079)		(2.788)		(2.708)
Family Income		4.297~		6.135*		4.682*		-3.862~
		(1.901)		(1.593)		(1.581)		(1.701)
Mother High School Graduate		1.300		0.616		4.057		-1.321
		(3.943)		(3.904)		(3.195)		(3.799)
Mother Some College		9.881		10.191		12.074~		0.728
		(5.649)		(5.550)		(4.714)		(4.742)
Low Birth Weight		-3.623		-6.267		-4.484		1.549
		(4.895)		(5.021)		(3.090)		(3.742)
Lives with Stepfather	4.406	2.514	4.533	3.610	1.438	-0.209	-1.914	-2.097
	(3.254)	(3.413)	(3.191)	(3.374)	(2.557)	(2.528)	(2.161)	(2.448)
Lives with Single Mother	1.581	8.032	1.277	8.380~	-1.736	3.947	2.718	-0.712
	(3.767)	(4.598)	(3.891)	(4.206)	(2.992)	(3.432)	(2.789)	(3.032)
Sample Size	1031	866	822	696	1031	866	1031	866
R-Squared	0.045	0.136	0.146	0.243	0.060	0.128	0.036	0.050

Notes: Robust standard errors clustered by family in parentheses. p< .05 = ~ and p< .01 = *. R-Squared for probit is a pseudo-R-squared. Estimates use all observations without missing data.

APPENDIX A: DATA CONSTRUCTION AND VARIABLE DEFINITIONS

Appendix A: Data construction and variable definitions

A. Identifying Blended Families

In order to facilitate comparisons of outcomes for half-siblings in blended families we need to identify these households. Although the NLSY contains information on multiple sibling households, the data do not explicitly report whether a pair of siblings are half or full. The PSID does identify half-siblings in the Family Relationship file. However, to facilitate comparisons across the data sets, we use the same identification approach for each. To identify half-siblings in the data, we compare measures of family structure in a household.

We use a similar approach to identify stable blended families in the NLSY-Child data. We identify half-siblings within a household using the following criteria: A) one sibling reports living with a father and the other reports not living with a father; or B) both siblings report not living with a father but report fathers living at different distances from the child; or C) one child reports the father is dead while the other does not. To make our NLSY-Child stable blended-family sample more nearly comparable to the NLSY stable blended-family sample, we impose the additional restriction that at least one child in the household reports having lived with both biological parents from birth until the time of the survey.

Table A.1 contains the definitions of the variables used in this analysis.

Table A.1
Outcome and Family Structure Variable Definitions: PSID, NLSY, and NLSY-Child

Outcome Variables:	Definitions:
PSID and NLSY	
Years of Schooling	NLSY: Maximum years of schooling observed 1985-1994 PSID: Maximum years of schooling observed 1985-1997
High School Graduate = 1	Indicator: Completed high school by 1994 in NLSY by 1997 in PSID
College Attendance = 1	Indicator: Attended college by 1994 in NLSY by 1997 in PSID
College Graduate = 1	Indicator: Completed college by 1994 in NLSY by 1997 in PSID
NLSY-Child	
Peabody Individual Achievement Tests Reading Recognition Reading Comprehension Math Percentile Scores	Nationally-normed percentile scores
Behavioral Problems Index Percentile Score	Survey-normed percentile score of behavioral problems.
NLSY and PSID Family Structure Variables:	**Definitions:**
NLSY Proportion defined as:	Years living in a given family structure(child ages 0-16) divided by 17
PSID Proportion defined as:	Years observed between 1968-85 (child ages 1-16) in a given family structure, divided by total years observed between 1968-85 (child ages 1-16)
Proportion Lived in Traditional Family	Living with both biological parents and biological siblings only
Proportion Lived with Single Parent	Living with either single mother or single father and no stepparent
Proportion Lived in a Blended Family	Living with stepparent and biological parent who are married; or living with both biological parents and at least one half-sibling
Proportion Lived in Other Family Structure	Living without a biological parent and with other relatives, foster care, etc.
Lived in Traditional Family Continuously = 1	Indicator variable where proportion lived with both biological parents =1
Lived in Single Parent Family = 1	Indicator variable where ever lived with a single parent and never lived with a stepparent
Lived in Blended Family = 1	Indicator variable where ever lived in a blended family
Lived in Other Family Structure = 1	Indicator variable where ever lived without both biological parents

Table A.1
Outcome and Family Structure Variable Definitions: PSID, NLSY, and NLSY-Child

NLSY-Child Family Structure Variables:	**Definitions**
Note: All Children in the NLSY-Child Sample live with their biological mother.	
Lived in Traditional Family	Indicator for 1986, 1988, 1990, 1992, and 1994
Lived with Single Mother	Indicator for 1986, 1988, 1990, 1992, and 1994
Lived in Blended Family	Indicator for 1986, 1988, 1990, 1992, and 1994
Other Independent Variables:	
Female = 1	Indicator: Female = 1
African American = 1	Indicator: African-American=1
Hispanic = 1	Indicator: Hispanic=1
Birth Order	NLSY and PSID: Number of older siblings + 1
Number of Siblings	NLSY: Average of number of siblings reported in 1979 and 1993 PSID: Average number of siblings 1968-1985 NLSY-Child: Total number of siblings 1994
Practiced Religion = 1	Indicator: child practiced religion=1
Family Income	NLSY: Log of Family Income 1979 PSID: Log of Average Family Income 1968-1985 NLSY-Child: Log of Family Income in 1986, 1988, 1990, 1992, 1994 deflated by PCE deflator (1992=100)
Mother High School Graduate = 1	Indicator: Biological Mother is high school graduate
Mother Some College = 1	Indicator: Biological Mother has more than 12 years of schooling
Mother's Schooling Missing = 1	Mother's education information missing
Father High School Graduate = 1	Indicator: Biological Father is high school graduate
Father Some College = 1	Indicator: Biological Father has more than 12 years of schooling
Father's Schooling Missing = 1	Father's education information missing
Age	NLSY-Child: Age in 1986, 1988, 1990, 1992, 1994
Low Birth Weight	Indicator for birth weight below 5.5 pounds

APPENDIX B: SUPPLEMENTARY TABLES

Table B.1

NLSY Sibling Estimates of the Effect of Family Structure on Schooling Outcomes
Alternative Specification with Family Structure Indicator Variables

	Years of Schooling		High School Graduate		College Attendance		College Graduate	
	OLS	OLS	Probit	Probit	Probit	Probit	Probit	Probit
Variable	(A)	(B)	(A)	(B)	(A)	(B)	(A)	(B)
Intercept	13.300*	8.439*	1.252*	-1.755*	-0.072	-2.496*	-0.957*	-3.073*
	(0.076)	(0.568)	(0.048)	(0.420)	(0.040)	(0.384)	(0.046)	(0.484)
Disadvantaged	-0.907*	-0.328*	-0.473*	-0.192~	-0.402*	-0.136~	-0.301*	-0.058
Oversample	(0.116)	(0.111)	(0.079)	(0.081)	(0.059)	(0.069)	(0.065)	(0.088)
Female	0.419*	0.436*	0.246*	0.312*	0.224*	0.249*	0.167*	0.210*
	(0.066)	(0.062)	(0.047)	(0.055)	(0.039)	(0.045)	(0.049)	(0.056)
African-American	0.042	0.644*	0.166	0.445*	0.028	0.367*	-0.122	0.130
	(0.118)	(0.111)	(0.086)	(0.090)	(0.064)	(0.074)	(0.068)	(0.086)
Hispanic	-0.272	0.448*	-0.090	0.188	-0.038	0.364*	-0.311*	-0.045
	(0.149)	(0.141)	(0.090)	(0.097)	(0.077)	(0.089)	(0.096)	(0.116)
Birth Order		0.047~		0.026		0.018		-0.008
		(0.024)		(0.018)		(0.017)		(0.024)
Number of Siblings		-0.120*		-0.065*		-0.062*		-0.026
		(0.022)		(0.016)		(0.016)		(0.021)
Religion		0.500*		0.451*		0.179		0.052
		(0.188)		(0.116)		(0.115)		(0.151)
Family Income 1979		0.346*		0.230*		0.176*		0.168*
		(0.052)		(0.040)		(0.036)		(0.046)
Mother High School		0.558*		0.288*		0.293*		0.193~
Graduate		(0.094)		(0.085)		(0.064)		(0.081)
Mother Some College		1.279*		0.419*		0.786*		0.403*
		(0.130)		(0.129)		(0.087)		(0.099)
Mother's Schooling		-0.138		-0.152		-0.034		-0.054
Missing		(0.145)		(0.111)		(0.108)		(0.171)
Father High School		0.398*		0.417*		0.197*		0.116
Graduate		(0.096)		(0.083)		(0.066)		(0.082)
Father Some College		1.543*		0.853*		0.831*		0.511*
		(0.124)		(0.143)		(0.080)		(0.091)
Father's Schooling		0.067		0.089		0.010		-0.157
Missing		(0.113)		(0.085)		(0.083)		(0.125)
Single Parent = 1	-0.314*	-0.110	-0.266*	-0.187~	-0.159~	-0.037	-0.137	-0.054
	(0.110)	(0.109)	(0.074)	(0.086)	(0.062)	(0.074)	(0.079)	(0.093)
Blended Family = 1	-0.676*	-0.342*	-0.242*	-0.139	-0.394*	-0.203~	-0.645*	-0.530*
	(0.115)	(0.113)	(0.086)	(0.098)	(0.074)	(0.083)	(0.113)	(0.128)
No Parents = 1	-1.023*	-0.552~	-0.668*	-0.567*	-0.490*	-0.295	-0.143	0.110
	(0.235)	(0.237)	(0.123)	(0.146)	(0.146)	(0.170)	(0.168)	(0.197)
Sample Size	4674	3817	4674	3817	4674	3817	4674	3817
R-Squared	0.075	0.289	0.052	0.166	0.036	0.162	0.044	0.115

Notes: Robust standard errors clustered by family in parentheses. p< .05 = ~ and p< .01 = *. R-Squared for probit is a pseudo-R-squared.

Table B.2
PSID Sibling Estimates of the Effect of Family Structure on Schooling Outcomes
Alternative Specification with Family Structure Indicator Variables

	Years of Schooling		High School Graduate		College Attendance		College Graduate	
	OLS	OLS	Probit	Probit	Probit	Probit	Probit	Probit
Variable	(A)	(B)	(A)	(B)	(A)	(B)	(A)	(B)
Intercept	13.358*	6.619*	1.469*	-1.891	-0.093	-5.845*	-0.666*	-5.222*
	(0.108)	(1.340)	(0.087)	(1.193)	(0.070)	(1.037)	(0.079)	(1.409)
Disadvantaged	-0.605*	-0.053	-0.296~	-0.014	-0.314*	0.057	-0.387*	-0.041
Oversample	(0.148)	(0.129)	(0.117)	(0.119)	(0.095)	(0.097)	(0.118)	(0.122)
Female	0.282*	0.311*	0.069	0.104	0.299*	0.357*	0.131	0.138
	(0.083)	(0.075)	(0.078)	(0.080)	(0.060)	(0.064)	(0.072)	(0.078)
African-American	-0.171	0.460*	0.027	0.419*	-0.086	0.369*	-0.352*	0.058
	(0.151)	(0.140)	(0.123)	(0.129)	(0.099)	(0.104)	(0.122)	(0.133)
Hispanic	-0.217	0.444	-0.247	0.143	0.076	0.533*	-0.224	0.093
	(0.367)	(0.328)	(0.249)	(0.266)	(0.195)	(0.195)	(0.317)	(0.318)
Birth Order		-0.016		-0.027		-0.012		0.003
		(0.021)		(0.020)		(0.019)		(0.026)
Number of Siblings		-0.163*		-0.092*		-0.122*		-0.152*
		(0.034)		(0.034)		(0.030)		(0.040)
Religion		-0.551		-0.488		-0.368		-0.588
		(0.470)		(0.319)		(0.312)		(0.385)
Family Income 1979		0.649*		0.355*		0.555*		0.477*
		(0.119)		(0.110)		(0.094)		(0.127)
Mother High School		0.322*		0.353*		0.143		0.036
Graduate		(0.105)		(0.105)		(0.085)		(0.111)
Mother Some College		1.217*		0.967*		0.814*		0.500*
		(0.180)		(0.252)		(0.135)		(0.163)
Mother's Schooling		0.057		0.097		0.036		0.171
Missing		(0.270)		(0.278)		(0.281)		(0.274)
Father High School		0.352*		0.251~		0.301*		0.174
Graduate		(0.124)		(0.127)		(0.095)		(0.126)
Father Some College		0.952*		0.359		0.660*		0.578*
		(0.176)		(0.210)		(0.120)		(0.150)
Father's Schooling		0.498*		0.193		0.401*		0.323
Missing		(0.173)		(0.165)		(0.150)		(0.229)
Single Parent = 1	-0.673*	-0.511*	-0.588*	-0.529*	-0.406*	-0.311~	-0.539*	-0.492*
	(0.144)	(0.166)	(0.132)	(0.168)	(0.109)	(0.138)	(0.152)	(0.187)
Blended Family = 1	-0.426*	-0.186	-0.353*	-0.326*	-0.160	0.017	-0.372*	-0.238~
	(0.128)	(0.114)	(0.108)	(0.109)	(0.085)	(0.087)	(0.108)	(0.112)
No Parents = 1	-1.063*	-0.577~	-0.918*	-0.720*	-0.495*	-0.142	-0.794~	-0.579
	(0.255)	(0.243)	(0.215)	(0.223)	(0.178)	(0.192)	(0.324)	(0.345)
Sample Size	1980	1980	1980	1980	1980	1980	1980	1980
Adjusted R-Squared	0.091	0.256	0.058	0.133	0.045	0.162	0.098	0.203

Notes: Robust standard errors clustered by family in parentheses. p< .05 = ~ and p< .01 = *. R-Squared for probit is a pseudo-R-squared.

Table B.3
Tests of Mean Differences in NLSY Sibling Sample

Test: Mean Outcome Half-Siblings in Stable Blended Families v. Siblings in Traditional Families

Outcome	Mean Half-Siblings	Mean Traditional Families	Test Statistic	P-value
Years of Schooling	12.318	13.125	**5.255**	0.000
High School Graduate	0.786	0.879	**2.779**	0.006
College Attendance	0.292	0.456	**4.327**	0.000
College Graduation	0.026	0.150	**8.645**	0.000
Sample Size	154	3263		

Test: Mean Outcome in Traditional families v. Joint Biological in Stable Blended Family Sample

Outcome	Mean Joint Biological	Mean Traditional	Test Statistic	P-value
Years of Schooling	12.479	13.125	**3.225**	0.002
High School Graduate	0.822	0.879	1.262	0.211
College Attendance	0.315	0.456	**2.537**	0.013
College Graduation	0.041	0.150	**4.479**	0.000
Sample Size	73	3263		

Test: Mean Outcome Joint Biological v. Stepchild in Stable Blended Family Sample

Outcome	Mean Joint Biological	Mean Stepchild	Test Statistic	P-value
Years of Schooling	12.479	12.173	1.042	0.299
High School Graduate	0.822	0.753	1.043	0.299
College Attendance	0.315	0.272	0.588	0.558
College Graduation	0.041	0.012	1.087	0.280
Sample Size	73	81		

Notes: Traditional defined as observed in the survey as always living with both biological parents. Stepchild defined as ever living with a stepparent. Numbers in **Bold** are statistically significant.

Table B.4
Tests of Mean Differences in PSID Sibling Sample

Test: Mean Outcome Half-Siblings in Stable Blended Families v. Siblings in Traditional Families

Outcome	Mean Half-Siblings	Mean Traditional Families	Test Statistic	P-value
Years of Schooling	12.522	13.150	**3.513**	0.001
High School Graduate	0.838	0.910	**2.002**	0.048
College Attendance	0.360	0.456	**1.973**	0.051
College Graduation	0.090	0.196	**3.522**	0.001
Sample Size	111	1038		

Test: Mean Outcome in Traditional families v. Joint Biological in Stable Blended Family Sample

Outcome	Mean Joint Biological	Mean Traditional	Test Statistic	P-value
Years of Schooling	12.549	13.150	**2.773**	0.007
High School Graduate	0.902	0.910	0.197	0.845
College Attendance	0.373	0.456	1.186	0.241
College Graduation	0.039	0.196	**5.197**	0.000
Sample Size	51	1038		

Test: Mean Outcome Joint Biological v. Stepchild in Stable Blended Family Sample

Outcome	Mean Joint Biological	Mean Stepchild	Test Statistic	P-value
Years of Schooling	12.549	12.500	0.148	0.883
High School Graduate	0.902	0.783	1.741	0.085
College Attendance	0.373	0.350	0.244	0.808
College Graduation	0.039	0.133	-1.807	0.074
Sample Size	60	51		

Notes: Traditional defined as observed in the survey as always living with both biological parents. Stepchild defined as ever living with a stepparent. Numbers in **Bold** are statistically significant.

Table B.5
NLSY Blended Family Sample Estimates
of the Effect of Family Structure on Educational Outcomes

	Years of Schooling		High School Graduate		College Attendance	
	OLS	OLS	Probit	Probit	Probit	Probit
Variable	(A)	(B)	(A)	(B)	(A)	(B)
Intercept	11.918*	10.704*	0.793*	0.074	-0.910*	-1.314*
	(0.378)	(0.758)	(0.294)	(0.597)	(0.283)	(0.444)
Disadvantaged	0.119	0.095	-0.023	0.038	0.130	0.122
Oversample	(0.344)	(0.353)	(0.351)	(0.321)	(0.320)	(0.331)
Female	0.423	0.331	0.167	0.090	0.488~	0.561~
	(0.285)	(0.296)	(0.206)	(0.243)	(0.221)	(0.238)
African-American	0.593	0.681	0.262	0.450	0.247	0.379
	(0.424)	(0.372)	(0.392)	(0.387)	(0.353)	(0.374)
Hispanic	0.403	0.445	-0.375	-0.431	0.169	0.258
	(0.717)	(0.733)	(0.489)	(0.485)	(0.519)	(0.533)
Birth Order		0.138		0.180		0.076
		(0.106)		(0.098)		(0.073)
Number of Siblings		-0.057		-0.061		-0.046
		(0.084)		(0.080)		(0.075)
Religion		0.738		0.309		
		(0.528)		(0.477)		
Mother High School		-0.160		-0.071		0.019
Graduate		(0.390)		(0.315)		(0.325)
Mother Some College		0.941		0.141		1.230*
		(0.561)		(0.448)		(0.426)
Mother's Schooling		-0.089		-0.364		0.625
Missing		(0.792)		(0.637)		(0.563)
Father High School		0.594		0.366		0.266
Graduate		(0.389)		(0.360)		(0.285)
Father Some		1.348~				0.803
College		(0.563)				(0.416)
Father's Schooling		0.069		-0.326		-0.026
Missing		(0.388)		(0.336)		(0.370)
Proportion in	-0.665	-0.602	-0.406	-0.350	-0.325	-0.377
Non-intact Family	(0.364)	(0.386)	(0.231)	(0.272)	(0.261)	(0.306)
Sample Size	154	154	154	139	154	143
Adjusted R-Squared	0.06	0.165	0.037	0.111	0.045	0.123

Notes: Robust standard errors clustered by family in parentheses. p< .05 = ~ and p< .01 = *. R-Squared for probit is a pseudo-R-squared. Some variables and observations are omitted from Model (B) because their inclusion predicts the outcome perfectly.

Table B.6
PSID Blended Family Sample Estimates
of the Effect of Family Structure on Educational Outcomes

	Years of Schooling		High School Graduate		College Attendance	
	OLS	OLS	Probit	Probit	Probit	Probit
Variable	(A)	(B)	(A)	(B)	(A)	(B)
Intercept	12.371*	12.278*	1.419*	1.213~	-0.809*	-1.059~
	(0.391)	(0.661)	(0.389)	(0.592)	(0.304)	(0.541)
Disadvantaged	0.024	0.203	-0.396	-0.258	0.332	0.470
Oversample	(0.459)	(0.409)	(0.397)	(0.403)	(0.290)	(0.263)
Female	0.296	0.362	-0.142	-0.051	0.443	0.456
	(0.379)	(0.389)	(0.315)	(0.302)	(0.277)	(0.282)
African-American	-0.015	0.216	0.293	0.259	-0.073	-0.009
	(0.491)	(0.549)	(0.400)	(0.428)	(0.292)	(0.321)
Hispanic						
Birth Order		0.066		0.011		0.037
		(0.114)		(0.085)		(0.065)
Number of Siblings		-0.242		-0.066		-0.081
		(0.199)		(0.148)		(0.125)
Religion						
Mother High School		0.477~		0.671~		0.147
Graduate		(0.378)		(0.342)		(0.280)
Mother Some College						
Mother's Schooling		0.910				0.610
Missing		(0.689)				(0.441)
Father High School		0.815		0.269		0.669*
Graduate		(0.430)		(0.414)		(0.239)
Father Some		0.341		-0.354		0.243
College		(1.001)		(0.715)		(0.683)
Father's Schooling						
Missing						
Proportion in	-0.041	0.117	-0.405	-0.353	0.032	0.122
Non-intact Family	(0.419)	(0.492)	(0.333)	(0.398)	(0.301)	(0.348)
Sample Size	111	111	111	109	111	111
Adjusted R-Squared	0.007	0.089	0.034	0.092	0.027	0.068

Notes: Robust standard errors clustered by family in parentheses. p< .05 = ~ and p< .01 = *. R-Squared for probit is a pseudo-R-squared. Some variables and observations are omitted from Model (B) because their inclusion predicts the outcome perfectly.

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